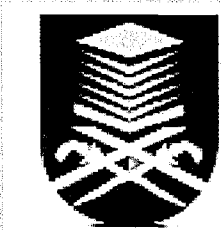


# **EXHAUST THROTTLING AND ITS EFFECT ON RADICAL COMBUSTION ACHIEVEMENT**

**This thesis is presented in partial fulfillment for the award of the  
Bachelor in Mechanical Engineering (Hons.) of  
MARA UNIVERSITY OF TECHNOLOGY**



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*In the name of Allah (S.W.T) the most gracious and merciful Creator. We Praise Him and seek His blessing on His Noble Prophet S.A.W.*

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## Abstract

In this study a two-stroke engine of 100 cc was used to carry out an experimental study towards achieving the radical combustion. It is to be noted that this work is mainly to propose a new strategy for control the exhaust gases and find a better method for this throttling controller, overcoming the previous study problems.

However other modification for the test bed was carried to enhance the experimental work accuracy. In addition to put the engine and the other parts of the rig in the proper condition, the Contact Point Ignition System (CPI) in the engine was replaced by a Capacitance Discharge Ignition System (CDI), due several advantages of the CDI over the traditional CPI. Changing of the ignition system deviate the work towards the reversibility of two-stroke engine. An illustration explain was introduced about the occurring of the reversibility for the two-stroke engine.

Throttling of the exhaust gases has been proposed outside the cylinder block to avoid the presence of the high temperature and difficulty of the movement of the sliding plate recorded in the previous work. Three different configuration restriction plates were prepared to act as a controller of the amount of the exhaust gases to be trapped.

Results indicate the criticality of the radical combustion where it is to be noted that radical could not be achieved by such method of control. The main reason, which is found, related to the condition of the radical is the amount of exhaust gas to be trapped and the time of trapping these gasses. As it is pointed out that making the control away from the exhaust port effect clearly the scope of the heated charges which are believed as the carrier of the well active radical, due its high concentration of heated unburnt hydrocarbon (UBH).